

longer. The magnitudes ranged for the most part between that of *Venus* at her brightest and a star of the second magnitude, those of inferior brightness being the exception. The apparent directions were remarkably conformable to the hypothesis of radiation from a fixed point of the heavens, that is, of a fixed direction relative to the Earth supposed to have no motion of translation. In these three particulars this November set of meteors presented a marked contrast to those I have frequently observed at the August period, in which a large majority were extremely small, trains were the exception rather than the rule, and a large number deviated considerably from an exact law of radiation. Another circumstance which also I had not noticed at the August period, was a blue or green appearance of several of the trains, with heads of a ruddy colour. Some few of the heads also were thought to be blue. I remarked that during a great part of the time over which the observations extended, there was a kind of *glow* throughout the heavens, a phenomenon which I was familiar with by my previous experience at the Cambridge Observatory, and which my assistants also noticed, and were accustomed to call "Auroral Light." It was, however, never accompanied by auroral streamers. Mr. Glaisher has informed me that the magnets at Greenwich were remarkably quiet during the night of November 13.

Cambridge, January 4, 1867.

On the Spectra of the Meteors of Nov. 13-14, 1866.

By John Browning, Esq.

To view the shower I chose the Observatory of Mr. H. Barnes, at Upper Holloway. The situation was good, the Observatory being built on high ground, and so placed that the Radiant Point rose in the contrary direction to the lights of London.

I devoted my attention exclusively to attempting to obtain the spectra of as many meteors as possible.

After catching a few spectra in different directions, I at length decided on keeping the direct-vision prism pointed a little to the west of *Leo Major*, with the axis of the prism parallel to the horizon. The spectra which I saw were those of meteors which started from the Radiant Point and passed through the belt of *Orion*. Of course the number of meteors which came into my field was comparatively limited, but the whole of them travelled in a direction parallel to the axis of the prism, a condition essential in the observation of the spectra.

From the rapid flight of the meteors rendering the spectra

very difficult to catch, I cannot pretend to speak with confidence of the appearance of the spectra shown by the prism, but I saw a great difference between the spectra. I believe that I saw spectra of the following kinds :—

- A. Continuous spectra, or those in which the whole of the colours of the solar spectrum were visible, excepting the violet rays.
- B. Spectra in which the yellow greatly preponderated; but which in every other respect resembled those above described.
- C. Spectra of almost purely homogeneous yellow light, but with a faint continuous spectrum, that is, a faint trace of red on one side and green on the opposite side of the yellow portion of the spectrum.
- D. Spectra of purely homogeneous green light, of this kind I only saw two.

I observed through the prism spectra of several trains. The light which was mostly blue, green, or steel grey, generally appeared homogeneous; but this may have arisen from the light having been too faint to produce a visible spectrum. Stars below the 2nd or 3rd mag., although visible through the prism, fail from this cause to give spectra in which blue and red are perceptible.

It will probably be remarked that I have not spoken of having observed any lines in the spectra. All the nuclei seemed to give continuous spectra which contained the whole of the colours of the spectrum; what I should term the tails, not the trains, of the nuclei, presented the appearances I have described. In every instance I remarked that orange-yellow appeared to preponderate over the other colours in the continuous spectra. When a prism only is used it seems to me impossible that any sharply defined lines should be shown. Still, from differences in the colours of spectra, some information may, I think, be obtained. As is well known, chemists and mineralogists infer the presence of certain elements in the substance under analysis, from the colour communicated by the substance to the blowpipe flame. Thus: if the flame become yellow they suspect the presence of sodium; red, strontium; green, barium or thallium; lavender, potassium. The prism will do more than this, it will show if the flame contains even a faint trace of any other colour, while without the prism the faint colour would be completely masked by the colour which predominates. From the difficulty of catching meteors within such a narrow space, I fear it will be found impossible to use a prism provided with a slit formed by a pair of knife edges so as to define any lines. But, I think it may be possible to use a prism in connexion with a cylindrical lens. Such an arrangement would be capable of showing well-defined lines, if the observed meteors contained any elements which would give bright lines in an ordinary spectroscope.

I desire to express my great obligations to Mr. Alexander Herschel for the constant attention and invaluable assistance he has rendered me in my endeavours to pursue this investigation, on which he is known to have made such successful researches and added so much to our stock of information; indeed, but for Mr. Herschel's kindness, I should not have approached the subject.

On a Bright Meteor, Nov. 13-14, 1866.
By R. Hodgson, Esq.

After the meteoric shower had subsided, and only occasional trains appeared at intervals, I noticed at 3^h 6^m past midnight, or Nov. 13 15^h 6^m G.M.T., a brilliant train, which burst with a very bright nucleus larger than *Jupiter*, so close to the house that it appeared within a few yards; its direction was from *Leo* towards the two stars in the tail of *Ursa Major*, and as it was not seen by the observers at Greenwich (seven miles due south), I am inclined to believe the outburst was within half-a-mile.

Chingford, Essex,
15 Nov. 1866.

Accounts of the Meteoric Shower of 1866, Nov. 13-14, have also been received from Mr. E. J. Lowe, observing at the Highfield House Observatory, and from Mr. Talmage, at Mr. Barclay's Observatory, Leyton, Essex.

On the Solar Eclipse of 1868, August 17.
By Major J. E. Tennant, R.A.

(*In a Letter to Mr. Stone.*)

Will you allow me through you to draw attention of the Council to the total eclipse of August 17, 1868?

I presume no observers from Europe will feel disposed to incur the voyage for the sight, but there will be no lack in India if the matter be taken in time, and the Indian Government can be induced to give facilities, if they will give no greater aid.

I have just placed the Centre Line, as given in the *Nautical Almanac*, on the map. I find that entering India on the west, near Kolapoor in the south of the Bombay Presidency, it passes by the confluence of the Kistna and Bheura to Gopalpoor and Masulipatam on the eastern coast. In the Bay of Bengal it would seem to pass among the small islands lying on the north